KCC 4779
K-C 17,026
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Ralph Anderson, et al. Art Unit 1731
Serial No. 10/039,236
Filed December 31, 2001
Confirmation No. 7312
For METHOD FOR REDUCING UNDESIRBLE ODORS GENERATED BY PAPER HAND TOWELS
Examiner Mark Halpern

October 9, 2006

APPEAL BRIEF

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APPEAL BRIEF

This is an appeal from the final rejection of the claims of the above-identified application made in the Office action dated July 26, 2006. A Notice of Appeal was filed on August 7, 2006.

I. REAL PARTY IN INTEREST

The real party in interest in connection with the present appeal is Kimberly-Clark Worldwide, Inc. of 401 N. Lake Street, Neenah, Wisconsin 54957-0349, a corporation of the state of Delaware, owner of a 100 percent interest in the pending application.

II. RELATED APPEALS AND INTERFERENCES

Appellants are aware of one pending appeal, which may be related to, directly affect or be directly affected by, or have a bearing on, the Board's decision in the pending appeal. Specifically, a Notice of Appeal was filed in the related case of U.S. Application No. 10/361,841 on June 22, 2006, and an Appeal Brief was filed in this case on August 21, 2006.

III. STATUS OF CLAIMS

Claims 1-24 are currently pending in the application. A copy of the pending claims appears in the Claims Appendix of this Brief.

Claims 10, 11, 22, and 23 have been withdrawn and claims 25-28 have been cancelled. Claims 1-9 and 12 stand rejected under 35 U.S.C. §103(a). Claims 13-21 and 24 stand rejected under 35 U.S.C. §102(a). The rejection of claims 1-9 and 12 under 35 U.S.C. §103(a) and the rejection of claims 13-21 and 24 under 35 U.S.C. §102(a) are being appealed.

IV. STATUS OF AMENDMENTS

No amendments have been filed after the final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following summary correlates claim elements to specific embodiments described in the application specification, but does not in any manner limit claim interpretation. Rather, the following summary is provided only to facilitate the Board's understanding of the subject matter of this appeal.

Commercial paper products such as hand towels are manufactured from cellulosic base sheets. A cellulosic base sheet is a paper product in its raw form prior to undergoing post-treatment such as calendaring and embossing. In general, cellulosic base sheets are made by preparing an aqueous suspension of papermaking fibers and injecting or depositing the suspension onto an endless sheet-forming fabric to form a wet-

laid web, which is then dewatered and dried to produce a base sheet suitable for finish processing (See Specification at p. 1, lines 11-19 and independent claims 1 and 13).

Because of its commercial availability and practicality, through-drying is commonly used to dry base sheets. Through-drying involves removing water from a wet web by passing a heated gas (e.g., hot air) through the web. More specifically, through-air drying typically comprises transferring a partially dewatered, wet-laid web from a sheet-forming fabric to a coarse, highly permeable through-drying fabric. A stream of heated air is passed through the wet web carried on the through-drying fabric as it runs over the high permeability rotating cylinder or drum of a through-drying apparatus. *See* Specification at p. 1, line 20 to p. 2, line 5.

A strong, burnt popcorn-like odor is often emitted from finished paper hand towels when the towels are wetted (i.e., re-wetted after final drying of the base sheet from which the towel is made). This problem of malodor release is particularly present in paper products made from cellulosic base sheets which have been through-air dried at relatively high air temperatures. It was hypothesized that over-drying or over-heating of the base sheets was leading to the malodor problem upon re-wetting of the paper product. By operating the through-air drying stage of a base sheet manufacturing process at a lower temperature and compensating with slightly longer sheet residence times on the drying drum, the malodor problem can be largely eliminated. However, longer residence times in the through-drying apparatus adversely affect the overall productivity of the base sheet manufacturing process. *See* Specification at p. 2, lines 6-20.

The present application is directed to a process which can reduce or eliminate malodor released upon re-wetting of paper

products, particularly those made from through-dried cellulosic base sheets, while allowing higher air drying temperatures, specifically air temperatures of at least about 190°C (see Specification at p. 12, lines 3-4 and dependent claim 17), more preferably from about 190°C to 210°C (see Specification at p. 12, lines 4-7 and dependent claim 18), and even more preferably from about 200°C to 205°C (see Specification at p. 12, lines 7-9 and dependent claim 19), and shorter dryer residence times to be used to increase product throughput and productivity (see Specification at p. 5, lines 2-16). In particular, it has been found that topically applying a glycol compound to a partially dewatered web of papermaking fibers during the base sheet manufacturing process can counteract and substantially reduce the release of malodor released upon wetting (i.e., re-wetting) of the dried base sheet material in the final product (see Specification at p. 8, lines 6-14 and independent claims 1 and 13). Examples of suitable glycol compounds include polyethylene glycol, triethylene glycol, glycerol, and mixtures thereof (see Specification at p. 8, lines 8-9 and independent claims 1 and 13). In one specific embodiment, the glycol compound is polyethylene glycol having a molecular weight of from about 400 to about 800 (see Specification at p. 10, lines 11-14 and dependent claims 2 and 14). Even more suitably, the polyethylene glycol has a molecular weight of about 600 (see Specification at p. 10, lines 14-17 and dependent claims 3 and 15).

Moreover, it has been found that when a glycol compound is to be applied to the partially dewatered web, the compound is preferably applied to the partially dewatered web in an add-on amount of from about 0.5 to about 20% by weight of the papermaking fibers in the web (see Specification at p. 10, lines

18-22, dependent claim 4, and independent claim 13). In one specific embodiment, the glycol compound is applied to the partially dewatered web in an add-on amount of from about 1 to about 2% by weight of the papermaking fibers in the web (see Specification at p. 10, lines 22-25 and dependent claims 5 and 16).

In one specific embodiment, the present application includes a process for manufacturing a cellulosic paper product. The process comprises forming an aqueous suspension of papermaking fibers; depositing said aqueous suspension of papermaking fibers onto a sheet-forming fabric to form a wet web; dewatering said wet web to form a partially dewatered web; topically applying a glycol compound selected from the group consisting of polyethylene glycol, triethylene glycol, glycerol and mixtures thereof to said partially dewatered web, said partially dewatered web having a fiber consistency of about 80% or less; and drying said partially dewatered web by passing heated air at a temperature of at least about 175°C through said web (See independent claim 1).

In another specific embodiment, the present application includes a process for manufacturing a cellulosic paper product. The process comprises forming an aqueous suspension of papermaking fibers; depositing said aqueous suspension of papermaking fibers onto a sheet-forming fabric to form a wet web; dewatering said wet web to produce a partially dewatered web having a fiber consistency of about 80% or less; topically applying a glycol compound selected from the group consisting of polyethylene glycol, triethylene glycol, glycerol and mixtures thereof to said partially dewatered web in an add-on amount of from about 0.5% to about 20% by weight of said papermaking

fibers in said web; and drying said partially dewatered web (see independent claim 13).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-9 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kohler, et al. (WO 01/18310).

Claims 13-21 and 24 stand rejected under 35 U.S.C. §102(a) as being anticipated by Kohler, et al. (WO 01/18310).

VII. ARGUMENT

A. Claims 1-9 and 12 are patentable under 35 U.S.C. §103(a) over Kohler, et al. (WO 01/18310)

Independent claim 1 is directed to a process for manufacturing a cellulosic paper product. The process comprises forming an aqueous suspension of papermaking fibers; depositing said aqueous suspension of papermaking fibers onto a sheet-forming fabric to form a wet web; dewatering said wet web to form a partially dewatered web; topically applying a glycol compound selected from the group consisting of polyethylene glycol, triethylene glycol, glycerol and mixtures thereof to said partially dewatered web, said partially dewatered web having a fiber consistency of about 80% or less; and drying said partially dewatered web by passing heated air at a temperature of at least about 175°C through said web.

Kohler et al. disclose a process for improving the surface characteristics (e.g., strength, brightness, aging resistance, etc.) of a paper or board by applying an aqueous solution (Lw)

of a surface-finishing active ingredient (W) to a hydrophilic paper or board sheet. The surface-finishing active ingredient includes polyethylene glycol (W_1) having an average molecular weight greater than 1500 and desirably from 1600 to 20,000, present in the solution at a concentration of up to 50% by weight, preferably from 0.1 to 20% by weight (See p. 9, lines 20-22). The aqueous solution comprising polyethylene glycol may be applied by spraying the aqueous solution onto the surface of the paper or board sheet to be treated in a section of the papermaking process in which the paper or board sheet has a moisture content ≤ 40% (See page 13, lines 12-15), corresponding to a fiber consistency of ≥ 60%. Preferably, the application rate of the solution is such that the concentration of the polyethylene glycol based on the dry substrate is in the range of from 0.005 g/m^2 to 5 g/m^2 (see p. 13, lines 7-8). The treated paper or board can be dried using drying rolls and drying roll batteries and, if desired, calenders and calender batteries in the dry end, using drying temperature conditions which are conventional, such as 100-250°C under pressure. Kohler et al. fail to disclose drying a partially dewatered web of papermaking fibers by passing heated air **at a temperature of at least 175°C** through the web.

In order for the Office to show a *prima facie* case of obviousness, M.P.E.P. §2143 requires that the Office must meet three criteria: (1) the prior art reference(s) must teach or suggest all of the claim limitations; (2) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings, and (3) there must be some reasonable expectation of success. Applicants respectfully submit that the Office has

not, and cannot, meet the burden of number (1) and/or (2) above, which requires the Office to show the reference teaches or suggests all of the claim limitations of the instant invention and that there is some suggestion or motivation to modify the reference teachings.

The Office asserts that Kohler, et al. disclose a process of forming paper wherein a web is dried at a temperature range from 100 to 250°C with hot air,[1] and that it would have been obvious that the hot air drying of Kohler, et al. includes hot air passing through the web since Kohler, et al. recite that other heating systems may be used. Applicants respectfully disagree.

Initially, applicants respectfully submit that the Office appears to be misinterpreting Kohler, et al. The Office has stated that Kohler et al. disclose drying a web at a temperature range from 100°C to 250°C by means of hot air. Although Kohler et al. do disclose using dry steam or hot air in the temperature range of from 100-250°C in the drying process (See Kohler, et al. at p. 13, line 30 to p. 14, line 1), Kohler et al. are actually drying paper or boards that have been treated with the aqueous solution (L_w) of a surface-finishing active ingredient (W) using drying rolls and drying roll batteries and, if desired, calenders and calender batteries. Specifically, Kohler, et al. state:

> The drying can be carried out in a manner conventional per se, using the usual drying rolls and drying roll batteries and, if desired, calenders and calender batteries in the dry end, and under the drying temperature conditions which are usual therein, for

[1] See final Office action of July 26, 2006 at p. 3. As support for this contention, the Office cites p. 13, lines 32-35 and p. 14, line 1 of Kohler, et al. As discussed herein, the cited passage of Kohler, et al. does not support the Office's contention.

> example with dry steam or hot air or other heating systems, for example in the temperature range from 100 to 250°C, and under the smoothing and roll pressure, in particular nip pressure and line pressure conditions, which are usual per se therein.[2]

It is thus clear from this passage that the temperature range of 100 to 250°C mentioned in Kohler, et al. is the temperature that can be used when drying is carried out using drying rolls, drying roll batteries, calenders, or calender batteries. Kohler et al. are clearly **not** through-drying a partially dewatered web of papermaking fibers by passing air heated to at least 175°C through the web, nor is such a possibility disclosed or suggested. As will be apparent to those skilled in the art, calendering is a finishing process in which heat and pressure are applied to the paper by passing it between heated rollers, to impart a flat, smooth surface to the paper. Kohler, et al. simply list hot air as one possible heating system for heating the calendering rolls (or drying rolls). There is simply no disclosure in Kohler, et al. of through-drying a partially dewatered web by passing air heated to a temperature of at least about 175°C through the web. As such, Applicants respectfully submit that the cited reference does not teach or suggest each and every limitation recited in claim 1 as required for a *prima facie* case of obviousness under MPEP §2143.

In addition to the foregoing, there is no suggestion or motivation in the cited reference to modify the reference teachings to conduct a through-drying operation at air temperatures of at least about 175°C. The present invention provides for shorter dryer residence times and increased productivity by allowing operation of the through-drying step at

[2] Kohler, et al., p. 13, ln. 30 to p. 14, ln. 2 (emphasis added).

these elevated temperatures, while significantly reducing malodor produced upon re-wetting the dried base sheets or finished cellulosic paper products made from the base sheets. As noted above, this is achieved by topically applying a glycol compound to the web of papermaking fibers during production of the cellulosic paper product. There is, however, simply no recognition Kohler, et al. of this benefit of topically applying a glycol compound to a web of papermaking fibers that is through-dried at elevated temperatures.

Polyethylene glycol is used by Kohler, et al. as a surface finishing active ingredient to improve properties of paper or board, such as gloss and smoothness, surface strength, prevention of fold breaking, brightness, aging resistance, and suitability of papers and boards for printing (See Kohler, et al., p. 1). The use of polyethylene glycol in the Kohler, et al. methods thus has nothing to do with reducing malodors generated upon re-wetting of a paper product through-air dried at elevated temperatures. Accordingly, one skilled in the art upon reading Kohler, et al. would have no basis to realize that the treatment of paper or board with a glycol compound would inhibit the production of malodors and allow for through-air drying at temperatures of at least about 175°C.

As discussed above, Kohler, et al. do not disclose through-drying methods, much less the air temperatures to employ in a through-drying operation. Rather, Kohler et al. disclose drying the surface-finishing active ingredient treated paper or boards using drying rolls and drying roll batteries and, if desired, calenders and calender batteries. Although Kohler, et al. disclose drying using the drying rolls or calenders at a temperature of from 100 to 250°C, Kohler, et al. attribute no significance to using elevated drying temperatures generally.

In fact, the Examples of Kohler, et al. disclose calendering at a roll surface temperature of 100°C (see Example 1 at p. 19, line 21; Example 2 at p. 21, line 4; Example 5 at p. 23, line 1; Example 8 at p. 24, line 24) or 130°C (see Example 9 at p. 26, line 15), temperatures that are well below the requisite through-drying temperature of 175°C called for in instant claim 1. There is certainly no suggestion in Kohler, et al. that the temperatures disclosed for drying using drying rolls or calenders would also be suitable for through-drying processes, nor is there any suggestion that treatment of paper or boards with a glycol compound inhibits malodor production and permits higher through-air drying temperatures of at least about 175°C.

Additionally, Kohler, et al. state that their methods of drying (drying rolls, drying roll batteries, and calenders) are advantageous as they increase the concentration of W_1 at the surface of the sheet during drying.[3] Nowhere is it taught or disclosed that drying the treated web by passing hot air through the web, as suggested by the Office and required in instant claim 1, would provide this advantageous effect.

Additionally, applicants note that the Office appears to be interpreting the statement on page 13, line 33 of Kohler, et al., referring to "other heating systems" as suggesting that other drying methods, such as through air drying, may be used to dry the treated paper or board. However, read in context, Kohler, et al. clearly intended this statement to mean that the drying rolls, drying roll batteries, calenders, or calender batteries may be heated using heating systems other than the dry

[3] *See generally*, Kohler, et al., at p. 12. In particular, Kohler, et al. state: "The application of the solution (L_w) advantageously takes place in such a way that (W_1) is increased in concentration at the paper or board surface during drying by the respective rolls, in particular calenders." Kohler, et al. at p. 12, lines 22-24.

steam or hot air specifically disclosed on page 13, line 33 of Kohler, et al. Kohler, et al. say nothing about using methods other than drying rolls or batteries or calenders to dry the treated paper or board. As such, it is respectfully submitted that this section of Kohler, et al. would not motivate one skilled in the art to dry a partially dewatered web of papermaking fibers by passing heated air at a temperature of at least about 175°C through the web.

Thus, nothing in the disclosure of Kohler, et al. would have motivated one skilled in the art to use the temperatures disclosed for drying using drying rolls or calenders in a through-drying process. Thus, there is simply no motivation or suggestion to modify the Kohler, et al. reference to arrive at each and every limitation of applicants' claim 1.

Additionally, it is well settled that the burden is on the Office to provide some suggestion of the desirability to do what the inventor has done; that is, the Office must present a convincing line of reasoning as to why the artisan would have found the claimed invention to be obvious in light of the teachings of the references. Applicants respectfully submit that the Office has not presented a convincing line of reasoning as to why the cited reference should be modified, as required by the MPEP.[4]

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[4] MPEP §2142 states:

> The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." quoting *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985) (emphasis added).

The Office simply states that it would have been obvious that the hot air drying of Kohler, et al. includes hot air passing through the web, since Kohler, et al. recite that other heating systems may be used. However, as noted above, the "other heating systems" referred to in Kohler, et al. refer to methods for heating the drying rolls, drying roll batteries, calenders, or calender batteries, other than dry steam or hot air. It does not refer to other methods of drying the treated paper or board. Furthermore, the Office has not provided any reasoning as to why the disclosure of drying temperatures for use with drying rolls, drying roll batteries, and calender and calender batteries would be obvious to apply to through-drying.

In view of the above, Applicants respectfully submit that a *prima facie* case of obviousness is lacking with respect to claim 1. As such, claim 1 is patentable over the cited references.

Claims 2-9 and 12 depend directly or indirectly from claim 1. As such, claims 2-9 and 12 are patentable over Kohler et al. for the same reasons as claim 1 set forth above, as well as for the additional elements they require.

Claims 2 and 3

Claim 2 depends from claim 1 and further requires the glycol compound to be polyethylene glycol having a molecular weight of from about 400 to about 800. Claim 3 depends from claim 2 and further requires the glycol compound comprise polyethylene glycol having a molecular weight of approximately 600.

As noted above, claims 2 and 3 are patentable over Kohler, et al. for the same reasons as claim 1 set forth above. In addition, Kohler, et al. fail to disclose the application of polyethylene glycol, having the molecular weight ranges set

forth in claims 2 and 3, to a partially dewatered web of papermaking fibers.

The Office has stated that Kohler, et al. discloses polyethylene glycol of molecular weight less than 800 being added topically to a sheet (See p. 2-3 of the final Office action). It is clear, however, from a reading of Kohler, et al. that such low molecular weight polyethylene glycols are not desirable for use in the processes of Kohler, et al. For instance, Kohler, et al. state that commercially available products that are "essentially free from low-molecular weight polyethylene glycols" may be used, but preferably, the polyethylene glycols contain less than 0.2% by weight of polyethylene glycol with a molecular weight of ≤ 800 (see Kohler, et al., at p. 6, ln. 11-18). Kohler, et al. thus clearly teach the use of polyethylene glycols with a high molecular weight (i.e., > 1500), and that polyethylene glycols with a low molecular weight (i.e., < 1000) are undesirable for use in the methods described therein. Kohler, et al. thus fail to teach or suggest all the limitations of claims 2 and 3. Nor is there any suggestion or motivation in Kohler, et al. to modify the teachings disclosed therein to use polyethylene glycol having a molecular weight of from about 400 to about 800 (as required in applicants' claim 2) or of approximately 600 (as required in applicants' claim 3) since, as noted above, Kohler, et al. actually teach away from the use of polyethylene glycols with a low molecular weight. Claims 2 and 3 are thus patentable for this additional reason.

Claims 4-5

Claim 4 depends from claim 3 and further requires the glycol compound to be topically applied to the partially

dewatered web in an add-on amount of about 0.5 to about 20% by weight of the papermaking fibers in the partially dewatered web.

As noted above, claim 4 is patentable over Kohler, et al. for the same reasons as claim 1 set forth above. In addition, Kohler, et al. fail to disclose the range of glycol compound addition recited in claim 4. In particular, applicants respectfully assert that Kohler, et al. fail to teach the addition of a glycol compound to a partially dewatered web in an add-on amount of about 0.5% to about 20% by weight of papermaking fibers in the web as required in claim 4.

On page 3 of the final Office action, the Office has stated that in Kohler, et al. polyethylene glycol is added in amounts of from about 0.3 percent (referring to Example 2 at page 21 of Kohler, et al.) to about 14 percent (referring to Example 1 at page 19 of Kohler, et al.). Applicants respectfully disagree with this characterization of Kohler, et al.

The 0.3% polyethylene glycol added in Example 2 relied on by the Examiner is based on the weight of fiber material (See page 21, line 8-9), the same basis used in claim 4. However, the upper end of the range of 14% from Example 1 relied on by the Examiner is clearly described as the moistening of the paper as a result of spraying the aqueous solution (Solution I) containing polyethylene glycol **and water** (See page 19, line 18), and not the amount of polyethylene glycol alone. The upper and lower endpoints of the range relied upon by the Office are thus actually measurements of two different things: the lower endpoint (0.3%) is the amount of polyethylene glycol based on the weight of the fiber material added to the paper in Example 2, while the upper end point (14%) is the amount of moistening as a result of spraying the aqueous solution (Solution I) containing polyethylene glycol and water in Example 1. The

Examples of Kohler, et al. thus do not disclose an add-on amount of polyethylene glycol of from about 0.3% to about 14%, as asserted by the Office.

Rather, at page 20, line 2, Kohler et al. teach that the moistening of 14% (relied on by the Examiner) corresponds to an application of polyethylene glycol of **0.2%** by weight based on the fiber material. This percentage is calculated by multiplying the application rate of Solution I (1.12 g/m^2) by the weight concentration of polyethylene glycol in Solution I (10%) and dividing by the basis weight of the paper (56 g/m^2). Similarly, none of the remaining Examples 3-8 discloses addition of polyethylene glycol in an amount greater than 0.3% by weight based on the fiber material. Example 9 does not disclose the addition of polyethylene glycol in terms of the fiber material and fails to disclose information sufficient to make such a calculation. Thus, Kohler, et al. fail to teach or suggest all of the limitations of claim 4, including topically applying a glycol compound to a partially dewatered web in an add-on amount of from about 0.5% to about 20% by weight of the papermaking fibers in the web.

Additionally, there is no motivation or suggestion to modify the Kohler, et al. reference to arrive at each and every limitation of claim 4. As noted above, the Kohler, et al. reference is directed to producing paper and paperboard having improved surface qualities, specifically, high gloss and high smoothness. As such, why would one skilled in the art modify the levels of polyethylene glycol used in Kohler, et al. to read on the amounts of claim 4, which is directed to using polyethylene glycol to reduce malodors in cellulosic paper products? Nowhere in Kohler, et al. is the problem of malodors in paper products even mentioned. As such, one skilled in the

art simply would not, and could not, be motivated to modify the amounts of polyethylene glycol in Kohler, et al., which is used for a completely different purpose than the polyethylene glycol of claim 4. As Kohler, et al. fail to teach or suggest each and every limitation of claim 4 and further, there is no motivation to modify Kohler, et al. to arrive at each and every limitation of claim 4, claim 4 cannot be said to be obvious over Kohler, et al. and is patentable for this additional reason.

Claim 5 is similar to claim 4 but specifies an add-on amount of about 1 to about 2% by weight of the papermaking fibers. Claim 5 is thus also patentable over Kohler, et al. for the same reasons as set forth above for claim 4.

B. Claims 13-21 and 24 are patentable under 35 U.S.C. §102(a) over Kohler, et al. (WO 01/18310).

Independent claim 13 is directed to a process for manufacturing a cellulosic paper product. The process comprises forming an aqueous suspension of papermaking fibers; depositing said aqueous suspension of papermaking fibers onto a sheet-forming fabric to form a wet web; dewatering said wet web to produce a partially dewatered web having a fiber consistency of about 80% or less; topically applying a glycol compound selected from the group consisting of polyethylene glycol, triethylene glycol, glycerol and mixtures thereof to said partially dewatered web in an add-on amount of from about 0.5% to about 20% by weight of said papermaking fibers in said web; and drying said partially dewatered web.

With regard to claim 13, the Office has stated that Kohler, et al. disclose that polyethylene glycol is added in amounts of 0.3% based on the weight of dry fiber material (citing Example 2, p. 21, lines 10-11). Applicants respectfully submit that

this disclosure in Kohler, et al. does not anticipate applicants' claim 13.

As noted above, the disclosure in Kohler, et al. of an application of polyethylene glycol in the amount of 0.3% based on the weight of dry fiber material does not fall within applicants' claimed ranges of an add-on amount of from about 0.5% to about 20% by weight of the papermaking fibers. Furthermore, applicants note that none of the other Examples (i.e., Examples 1 or 3-8) disclose addition of polyethylene glycol in an amount greater than 0.3% by weight based on the fiber material. For example, Example 1 discloses polyethylene glycol addition of 0.2% by weight of dry fiber material (See page 20, lines 1-2); Example 5 discloses polyethylene glycol addition of 0.2% by weight of dry fiber material (See page 23, lines 5-6); Example 8 includes polyethylene glycol addition of 0.15% by weight of dry fiber material (See page 25, lines 3-4), and the polyethylene glycol addition in Examples 3, 4, 6, and 7 is 0.2%,[5] 0.15%,[6] 0.1%,[7] and 0.15%[8] by weight of dry fiber material, respectively. Example 9 does not disclose the addition of polyethylene glycol in terms of the fiber material and fails to disclose information sufficient to make such a calculation.

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[5] This can be calculated by multiplying the application rate of Solution 2 (1.8 g/m^2) by the weight concentration of polyethylene glycol in Solution 2 (7.8%) and dividing by the basis weight of the paper (60 g/m^2).

[6] This can be calculated by multiplying the application rate of Solution 3 (1.8 g/m^2) by the weight concentration of polyethylene glycol in Solution 3 (5%) and dividing by the basis weight of the paper (60 g/m^2).

[7] This can be calculated by multiplying the application rate of Solution 5 (0.729 g/m^2) by the weight concentration of polyethylene glycol in Solution 5 (5%) and dividing by the basis weight of the paper (36 g/m^2).

[8] This can be calculated by multiplying the application rate of Solution 6 (0.729 g/m^2) by the weight concentration of polyethylene glycol in Solution 6 (7.5%) and dividing by the basis weight of the paper (36 g/m^2).

As stated in MPEP §2131, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Since Kohler, et al. fail to disclose topically applying a glycol compound to a partially dewatered web in an add-on amount of from about 0.5% to about 20% by weight of papermaking fibers in the web, Kohler, et al. fail to disclose each and every element of claim 13. As such, claim 13 is novel over the Kohler, et al. reference.

Claims 14-21 and 24 depend directly or indirectly from claim 13 and are patentable for the same reasons as claim 13 set forth above, as well as for the additional elements they require.

Claims 14 and 15

Claim 14 depends from claim 13 and further requires the glycol compound to be polyethylene glycol having a molecular weight of from about 400 to about 800. Claim 15 depends from claim 14 and further requires that the glycol compound comprises polyethylene glycol having a molecular weight of approximately 600.

As noted above, claims 14 and 15 are patentable over Kohler, et al. for the same reasons as claim 13 set forth above. In addition, Kohler, et al. fail to disclose the application of polyethylene glycol, having the molecular weight ranges set forth in claims 14 and 15, to a partially dewatered web of papermaking fibers.

The Office has stated that Kohler, et al. discloses polyethylene glycol of molecular weight less than 800 being added topically to a sheet (See p. 3 of the final Office action). However, as noted above, it is clear from a reading of

Kohler, et al. that such low molecular weight polyethylene glycols are not desirable for use in the processes of Kohler, et al. Kohler, et al. actually state that commercially available products that are "essentially free from low-molecular weight polyethylene glycols" may be used, but preferably, the polyethylene glycols contain less than 0.2% by weight of polyethylene glycol with a molecular weight of ≤ 800 (see Kohler, et al., at p. 6, ln. 11-18). Kohler, et al. thus clearly teach the use of polyethylene glycols with a high molecular weight (i.e., > 1500), and that polyethylene glycols with a low molecular weight (i.e., < 1000) are undesirable for use in the methods described therein. Kohler, et al. thus fail to set forth each and every element of claims 14 and 15. Claims 14 and 15 are thus patentable over Kohler, et al. for this additional reason.

Claims 17-19

Claim 17 depends from claim 15 and further requires that the partially dewatered web is dried by passing heated air at a temperature of at least about 190°C through the web.[9]

As noted above, claim 17 is patentable over Kohler, et al. for the same reasons as claim 13 set forth above. In addition, Kohler, et al. fails to disclose through-drying a partially dewatered web. As discussed above, although Kohler et al. do disclose using dry steam or hot air in the temperature range of from 100-250°C in the drying process (See p. 13, line 30 to p. 14, line 1), Kohler et al. are actually drying paper or boards that have been treated with the aqueous solution (L_w) of a

[9] Claim 18 depends from claim 17 and specifies the temperature of the heated air is from about 190° to about 210°C. Claim 19 depends from claim 18 and

surface-finishing active ingredient (W) using drying rolls and drying roll batteries and, if desired, calenders and calender batteries. The dry steam or hot air is merely used to heat the drying rolls, drying roll batteries, calenders, and calender batteries. Kohler et al. are **not** drying a partially dewatered web of papermaking fibers by passing heated air at a temperature of at least about 190°C through the web.

As such, claim 17 and claims 18-19, which depend therefrom, are also patentable over Kohler, et al. for this additional reason.

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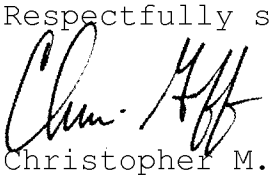
specifies the temperature of the heated air is from about 200° to about 205°C.

VIII. Conclusion

A prima facie case of obviousness has not been established pursuant to 35 U.S.C. § 103, because the cited art fails to disclose, teach and/or suggest all the elements of claims 1-9 and 12. Furthermore, anticipation of claims 13-21 and 24 has not been established pursuant to 35 U.S.C. § 102, because the Office has failed to show a prior art reference disclosing each and every element of claims 13-21 and 24. For these reasons, and for those more fully stated above, Appellants respectfully request the Office's rejections be reversed and claims 1-9, 12-21, and 24 be allowed.

The Commissioner is hereby authorized to charge $500 for the appeal brief and any additional fees which may be required to Deposit Account No. 19-1345.

Respectfully submitted,



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CLAIMS APPENDIX

1. (previously presented) A process for manufacturing a cellulosic paper product, the process comprising:

forming an aqueous suspension of papermaking fibers;

depositing said aqueous suspension of papermaking fibers onto a sheet-forming fabric to form a wet web;

dewatering said wet web to form a partially dewatered web;

topically applying a glycol compound selected from the group consisting of polyethylene glycol, triethylene glycol, glycerol and mixtures thereof to said partially dewatered web, said partially dewatered web having a fiber consistency of about 80% or less; and

drying said partially dewatered web by passing heated air at a temperature of at least about 175°C through said web.

2. (original) A process as set forth in claim 1 wherein said glycol compound is polyethylene glycol having a molecular weight of from about 400 to about 800.

3. (original) A process as set forth in claim 2 wherein said glycol compound comprises polyethylene glycol having a molecular weight of approximately 600.

4. (original) A process as set forth in claim 3 wherein said glycol compound is topically applied to said partially dewatered web in an add-on amount of about 0.5 to about 20% by weight of said papermaking fibers in said partially dewatered web.

5. (original) A process as set forth in claim 4 wherein said glycol compound is topically applied to said partially dewatered web in an add-on amount of about 1 to about 2% by weight of said papermaking fibers in said partially dewatered web.

6. (original) A process as set forth in claim 4 wherein the temperature of said heated air is from about 190° to about 210°C.

7. (original) A process as set forth in claim 6 wherein the temperature of said heated air is from about 200° to about 205°C.

8. (original) A process as set forth in claim 3 wherein said glycol compound is topically applied to said partially

dewatered web as an aqueous solution comprising from about 1 to about 80% polyethylene glycol.

9. (original) A process as set forth in claim 8 wherein said aqueous solution of said glycol compound comprises from about 40 to about 60% polyethylene glycol.

10. (withdrawn) A process as set forth in claim 1 wherein said glycol compound comprises triethylene glycol.

11. (withdrawn) A process as set forth in claim 1 wherein said glycol compound comprises glycerol.

12. (original) A process as set forth in claim 1 wherein said glycol compound is topically applied to said partially dewatered web by spraying.

13. (previously presented) A process for manufacturing a cellulosic paper product, the process comprising:

forming an aqueous suspension of papermaking fibers;

depositing said aqueous suspension of papermaking fibers onto a sheet-forming fabric to form a wet web;

dewatering said wet web to produce a partially dewatered web having a fiber consistency of about 80% or less;

topically applying a glycol compound selected from the group consisting of polyethylene glycol, triethylene glycol, glycerol and mixtures thereof to said partially dewatered web in an add-on amount of from about 0.5% to about 20% by weight of said papermaking fibers in said web; and

drying said partially dewatered web.

14. (original) A process as set forth in claim 13 wherein said glycol compound is polyethylene glycol having a molecular weight of from about 400 to about 800.

15. (original) A process as set forth in claim 14 wherein said glycol compound comprises polyethylene glycol having a molecular weight of approximately 600.

16. (original) A process as set forth in claim 15 wherein said glycol compound is topically applied to said partially dewatered web in an add-on amount of about 1 to about 2% by weight of said papermaking fibers in said partially dewatered web.

17. (original) A process as set forth in claim 15 wherein said partially dewatered web is dried by passing heated air at a temperature of at least about 190°C through said web.

18. (original) A process as set forth in claim 17 wherein the temperature of said heated air is from about 190° to about 210°C.

19. (original) A process as set forth in claim 18 wherein the temperature of said heated air is from about 200° to about 205°C.

20. (original) A process as set forth in claim 15 wherein said glycol compound is topically applied to said partially dewatered web as an aqueous solution comprising from about 1 to about 80% polyethylene glycol.

21. (original) A process as set forth in claim 15 wherein said aqueous solution of said glycol compound comprises from about 40 to about 60% polyethylene glycol.

22. (withdrawn) A process as set forth in claim 13 wherein said glycol compound comprises triethylene glycol.

23. (withdrawn) A process as set forth in claim 13 wherein said glycol compound comprises glycerol.

24. (original) A process as set forth in claim 13 wherein said glycol compound is topically applied to said partially dewatered web by spraying.

Claims 25-28 (canceled)

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.